

Remarks

Claims 1, 3, 5-13 and 15-20 are pending.

Claim 1 has been amended to particularly point out and distinctly claim Applicants' invention. Claim 1 has been amended to recite some of the limitations of former Claims 2 and 4. Claim 1 recites a micro-switch including an operating member cooperating with the operating mechanism, a common terminal, a first terminal providing a first output when the separable contacts are open and a second terminal providing a second output when the separable contacts are closed, the common terminal of the micro-switch being electrically isolated from the separable contacts and being adapted to receive a voltage from a power supply external to the circuit breaker. Claim 1 also recites a first indicator cooperating with the first output of the micro-switch and a second indicator cooperating with the second output of the micro-switch. See, for example, Figures 1-3 and 5 and the corresponding disclosure.

Claims 3, 5, 10, 12, 13, 15, 16 and 20 have been amended to be consistent with the amendment to Claim 1.

Claims 2, 4 and 14 are canceled, without prejudice.

A Supplemental Information Disclosure Statement and form accompany this Amendment.

Rejections under 35 U.S.C. § 103(a)

Claims 1-3¹ and 15-17 are rejected on the ground of being unpatentable over U.S. Patent No. 6,246,304 (Gasper) in view of U.S. Patent No. 4,969,063 (Scott et al.).

Gasper discloses a single pole circuit breaker 10 including an electrically insulating casing 20, which houses a stationary electrical contact 50, an electrical contact 60 mounted on a contact bar 70, and a handle 160, which is pivotally connected to a frame 100 via a pin 170. Figure 1 of the reference shows a lever arm 310 restraining a lip portion 350 of a plunger 340, when the contacts 50,60 and external handle 160 are in the ON state. Figure 2 of the reference shows a trip state wherein the external handle 160 is restrained in the ON position. A link housing 200 of a collapsible toggle linkage presses against the lever arm 310, thereby releasing the plunger 340 preventing a manual reset thereof, until the circuit breaker 10 is reset.

The Background section of Gasper states that an electronic indicator may also be provided, for example, a light emitting diode, which is selectively illuminated by power

¹ It appears that the Examiner also rejects Claims 4-8 on Page 3, paragraphs 3 and 4 of the Office Action.

from a load (U.S. Pat. No. 3,806,848), or by means of an auxiliary switch (U.S. Pat. Nos. 3,742,402, 3,742,403, 3,863,042 and 3,955,162 (of record)).

The Examiner states that Gasper does not disclose a first indicator and a second indicator illuminating to display the condition of separable contacts (either open or closed).

Scott et al. (Figure 1) discloses a breaker assembly 10 contained within a housing 12. Extending from the rear face of the housing is a blade-type terminal T1 configured to be plugged into a correspondingly configured buss connector terminal which is coupled to an incoming power line (not shown). Incoming power from the terminal T1 is led via a power lead 14 to an overload tripping element 16, here functionally represented as a breaker switch SB. Electrical power is supplied to a control circuit means 28 from a power lead 30 connected to terminal T1, thus supplying power from the power lines, and from a power lead 32 connected to an auxiliary terminal T3 optionally connected either to the neutral (return) line, or alternatively to the opposite high side of a 240 volt system supplying paired 120 volt single phase power distribution.

A three color light emitting diode (LED) unit 34 is mounted on the front wall of the housing 12. Such LED units 34 typically consist of a red and a green LED mounted behind a light-diffusing window 35. When only one LED is selectively energized the light coming from the window 35 will be either red or green; however, when both are energized the blending action of the window 35 causes an observer's eye to perceive the two colors as their additive complement, namely orange. Selective excitation of these two LEDs is provided via leads 36,38,40 connected to the control circuit 28. The control circuit 28 includes an auxiliary switching system SA operatively coupled to a tripping element 16, and adopting different switching configurations according to which of the three states the breaker assembly 10 adopts. Although the auxiliary switching system SA is shown as a simple single-pole-single-throw element in Figure 1, it may take a variety of configurations, including multiple pole switch configurations. According to which of the three breaker states are relayed to the auxiliary switching system SA, namely open, closed, and tripped, the two LEDs in the LED unit 34 will be excited singly (red or green), or commonly (red and green), thereby providing a clear indication of the state of the breaker assembly 10.

Figure 2 of the reference shows one version of the control circuit 28. Electrical power is supplied via one high line H1 of a 240 volt system via terminal T1. The breaker switch SB (Figure 1 of the reference) is a single-pole single-throw switch SB1 coupled to operate the auxiliary switch SA1 configured as a single-pole three-position switch,

which is operatively coupled to be directly actuated according to the position of the actuator 20.

Claim 1, as amended, recites a circuit breaker comprising a housing; separable contacts within the housing; an operating mechanism for opening and closing the separable contacts; a micro-switch including an operating member cooperating with the operating mechanism, a common terminal, a first terminal providing a first output when the separable contacts are open and a second terminal providing a second output when the separable contacts are closed, the common terminal of the micro-switch being electrically isolated from the separable contacts and being adapted to receive a voltage from a power supply external to the circuit breaker; a first indicator cooperating with the first output of the micro-switch, the first indicator being illuminated when the separable contacts are open; and a second indicator cooperating with the second output of the micro-switch, the second indicator being illuminated when the separable contacts are closed.

The references, whether taken alone or in combination, do not teach or suggest a micro-switch including an operating member cooperating with an operating mechanism, a common terminal, a first terminal providing a first output when separable contacts are open and a second terminal providing a second output when such separable contacts are closed, such common terminal of such micro-switch being electrically isolated from separable contacts and being adapted to receive a voltage from a power supply external to such circuit breaker; a first indicator cooperating with such first output of such micro-switch, such first indicator being illuminated when such separable contacts are open; and a second indicator cooperating with such second output of such micro-switch, such second indicator being illuminated when such separable contacts are closed.

At best, Scott et al. teaches and suggests a control circuit 28 including an auxiliary switching system SA operatively coupled to a tripping element 16, and electrically connected through power lead 30 to terminal T1, power lead 14 and breaker switch SB (separable contacts) as shown in Figure 1 of the reference. Gasper, which does not disclose a first indicator and a second indicator illuminating to display the condition of separable contacts, adds nothing to Scott et al. regarding the refined recital of Claim 1.

The refined recital of Claim 1 provides a relatively low cost, compact mechanism for illuminably indicating the open and closed status of separable contacts while remaining electrically isolated therefrom. It is submitted that this result is also not taught or suggested by the references.

Accordingly, for the above reasons, it is submitted that Claim 1 patentably distinguishes over the references.

Claims 3, 5-8 and 15-17 depend either directly or indirectly from Claim 1 and patentably distinguish over the references for the same reasons.

Furthermore, Claim 5, as amended, recites that the micro-switch is mounted within the housing, that the common terminal of the micro-switch is a first common terminal, that the first and second indicators include a second common terminal, that the voltage is a direct current voltage, and that the first and second common terminals are adapted to be energized from the direct current voltage.

Scott et al. teaches and suggests that the auxiliary switching system SA is electrically connected through power lead 30 to terminal T1, power lead 14 and breaker switch SB (separable contacts) in which electrical power is supplied via one high line H1 of a 240 volt system via the terminal T1. Gasper, which does not disclose a first indicator and a second indicator illuminating to display the condition of separable contacts, adds nothing to Scott et al. regarding the refined recital of Claim 5. Since the references neither teach nor suggest the refined recital of Claim 1, it is submitted that they clearly neither teach nor suggest the further limitations of Claim 5 that further patentably distinguish over the references.

Claims 9-14 and 18-20 are rejected on the ground of being unpatentable over Gasper and Scott et al. and further in view of U.S. Patent No. 6,342,995 (Jones).

Jones discloses a lighted escutcheon plate for power distribution equipment. An escutcheon plate 12 has terminals 14A-14F on a back side 16 for electrical communication using control power circuit 18; a first plurality of LED bulbs 22 of a predetermined color mounted in a predetermined arrangement on the escutcheon plate 12, the first plurality of LED bulbs 22 being visible from a front side 28 of the escutcheon plate 12, so as to provide a visual indication of an open circuit status by lighting when the power distribution circuit is opened; a second plurality of LED bulbs 24 of a predetermined color mounted in a predetermined arrangement on the escutcheon plate 12, the second plurality of LED bulbs 24 being visible from the front side 28 of the escutcheon plate 12, so as to provide a visual indication of a close circuit status by lighting when the power distribution circuit is closed.

Jones discloses a typical conceptual wiring diagram in Figures 5a-5c thereof, which depicts a typical functional relationship of lights to circuit breaker operating contacts. For example, in the flashing circuit shown in Figure 5c, if there is a fault in the power

distribution circuit and the circuit breaker trips, an auxiliary switch contact (bell circuit) in the circuit breaker will close and yellow LED bulbs 34 will begin to flash "on and off".

Jones, which discloses an auxiliary switch contact (bell circuit), and which employs the LED drive circuits BR1,VR3, BR2,VR4 and BR3,VR5 of Figure 8a, adds nothing to Gasper and Scott et al. regarding the recited micro-switch of Claim 1 to render Claim 1 unpatentable.

Furthermore, Claim 12, which depends directly from Claim 11 and indirectly from Claims 1, 9 and 10, provides that the first indicator is a first LED, the second indicator is a second LED, the first and second LEDs form a dual LED package, the first terminal is a normally open terminal providing the first output and the second terminal is a normally closed terminal providing the second output, the first LED includes a first anode and a first cathode, the second LED includes a second anode and a second cathode, which is electrically connected to the first cathode of the first LED, and the first and second cathodes are electrically connected to a resistor, which is adapted to be electrically interconnected with a common of the power source external to the circuit breaker.

Since the references neither teach nor suggest the refined recital of Claim 1, it is submitted that they clearly neither teach nor suggest the further limitations of Claim 12 that further patentably distinguish over the references.

Summary and Conclusion

The prior art made of record and not relied upon but considered pertinent to Applicants' disclosure has been reviewed.

In summary, it is submitted that Claims 1, 3, 5-13 and 15-20 are patentable over the references of record.

Reconsideration and early allowance are requested.

Respectfully submitted,



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